

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Divisional Application of Brumleve, et al.

Serial No.: Unassigned

Art Unit: Unassigned

Filed: Herewith

Examiner: Unassigned

Title: A FLUORESCENT LAMP CONTAINING A MERCURY ZINC AMALGAM AND A  
METHOD OF MANUFACTURE

**PRELIMINARY AMENDMENT**

The Honorable Commissioner of  
Patents and Trademarks  
Washington, D.C. 20231

Sir:

Preliminary to the examination of the Divisional Application filed herewith, please  
amend the application as follows:

**In the Claims:**

Please cancel Claims 1-36 without prejudice.

Please add the following new Claims 37-53.

- 37. (New) A temperature controlled fluorescent lamp comprising one or more zinc amalgam pellets sealed within the light emitting chamber thereof.
- 38. (New) The lamp of Claim 37 wherein at least one of said pellets comprises greater than 45 weight percent mercury.
- 39. (New) The lamp of Claim 37 wherein at least one of said pellets is in a metastable, non-equilibrium state.

- 40. (New) The lamp of Claim 37 wherein the amalgam of at least one of said pellets is binary.
- 41. (New) The lamp of Claim 37 wherein at least one of said pellets is formed by rapid solidification of molten zinc amalgam.
- 42. (New) A fluorescent lamp having one or more amalgam pellets sealed within the light emitting chamber thereof wherein at least one of the amalgam pellets is formed by rapid solidification of molten amalgam.
- 43. (New) The lamp of Claim 42 wherein the amalgam is zinc amalgam.
- 44. (New) The lamp of Claim 43 wherein the amalgam comprises greater than 45 weight percent mercury.
- 45. (New) A fluorescent lamp having an amalgam sealed therein wherein the amalgam comprises more than 45 weight percent mercury and has a vapor pressure which is not significantly different than the vapor pressure of pure mercury.
- 46. (New) The lamp of Claim 45 wherein the amalgam is zinc amalgam.
- 47. (New) The lamp of Claim 45 wherein the amalgam form one or more pellets.
- 48. (New) A temperature controlled lamp having a predetermined amount of mercury sealed therein in the form of a zinc amalgam comprising greater than 45 weight percent mercury wherein the amalgam is partially in the liquid and partially in the solid phase when the lamp is operating.
- 49. (New) The lamp of Claim 48 wherein the amalgam forms one or more pellets.

-- 50. (New) A lamp fill material for a fluorescent lamp comprising a zinc amalgam forming one or more pellets having more than 45 weight percent but not more than 60 weight percent mercury.

-- 51. (New) The fill material of Claim 50 wherein at about 20 degrees C said pellets comprise an interior with mercury-rich liquid portions.

-- 52. (New) The fill material of Claim 51 wherein said pellets comprise a shell having zinc-rich portions.

-- 53. (New) The fill material of Claim 52 wherein said pellets are porous so that mercury vapor diffuses from the interior of said pellets.--

In the Specification:

Please insert the following after the title:

-- This is a division of application Serial Number 08/299,292 which issued 15 January 2002 as U.S. Patent No. 6,339,287, which is incorporated herein by reference.--

REMARKS

Applicant submits herewith an Information Disclosure Statement disclosing German Patent DD 287,592 to Gohlke, et al. ("Gohlke"). Gohlke discloses the use of an amalgam in dosing mercury into lamps, particularly compact fluorescent lamps which commonly are of the "amalgam controlled" type of fluorescent lamp.

The Board in its Decision on Appeal dated 20 November 2000, found that Evans was directed to an "amalgam controlled" lamp and thus was not relevant to not relevant to claims directed to "temperature controlled" lamps. Gohlke, like Evans, is not relevant to temperature controlled lamps.


Further, Gohlke discloses dosing a compact fluorescent lamp (commonly such lamps are "amalgam controlled" lamps) with a dosing body formed from 2-45 weight percent mercury and an amalgamative metal. There is no disclosure nor suggestion whatsoever in Gohlke of forming the dosing body from an amalgam comprising more than 45 weight percent mercury, nor is such a method of dosing obvious from the teachings of Gohlke.

With reference to the Zn-Hg phase diagram shown in Figure 2 of this application, it is known to one of skill in the art to maintain the weight percent of the mercury below 45 weight percent to prevent the formation of a mixture of gamma phase and liquid phase or a mixture of gamma phase and beta phase in the amalgam. The formation of such mixtures in the amalgam as would be expected from the equilibrium phase diagram, results in a sticky, paste-like material which is not desirable for dosing lamps. It is known that the formation of gamma phase, being a peritectic reaction, does not follow the equilibrium phase diagram except under very slow solidification cooling rates and that most peritectic reactions solidify with an excess of enriched liquid phase. Thus, it is not obvious to form a zinc amalgam comprising more than 45 weight percent mercury which is suitable for dosing a lamp.

Further, the claims recite many other patentable limitations. For example, the prior art fails to disclose or suggests pellets formed by rapid solidification of molten amalgam; pellets having an outer shell with zinc-rich portions; pellets having an interior with mercury-rich liquid portions; pellets which are in a metastable, non-equilibrium state; or binary amalgams.

Consideration and allowance of new Claims 37-53 is solicited. No new matter has been added.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D. Joseph English', written over a horizontal line.

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